

**ABSTRACT**

A method is disclosed for increasing the activity of doped inorganic adsorbent materials in the adsorption of selected solute species from a gas-phase or from a fluid-phase. The method consists in selecting the type, or the amount, or the molecular dimensions of the dopant or dopants, or also in tailoring the pore structure of the doped inorganic adsorbent material through doping. Doped inorganic adsorbent materials produced with said method, and showing enhanced activity towards selected solute species, are also disclosed. The improved doped inorganic adsorbent materials are suitable in a number of different fields where adsorption of one or more selected solute species from a free fluid phase is needed.